leaving the condenser, the humidity of the entering air at the cooler becomes an important factor, whereas when low vacua only are required, with the consequent higher water temperatures at condenser outlet, the humidity and temperature of the entering air is not so important.

Cooling Ponds or Reservoirs.—Where there is sufficient ground area available for a cooling pond, without excessive cost, this arrangement has been commonly adopted for mills and works when no natural supply of condensing water is available. The construction of such a pond, however, is somewhat expensive in first cost and it is now a common practice to limit the size of the pond, and to assist the cooling of the water by introducing one or other of the other methods of cooling as an auxiliary. In the usual arrangement a low-level jet condenser would preferably be adopted, with the pond at such a level that the water will flow freely into it from the hot well. As mentioned on p. 222, the vacuum in the condenser may be depended upon to lift the water through a moderate height and inject it into the condenser.

Although a cooling pond is costly to construct, it requires little attention, and costs little for upkeep unless it should become leaky. To prevent leakage of water the sides and bottom usually have to be puddled with clay for a thickness of 18 to 24 in., and the sloping sides finished off with rubble. The coursing may be thickened near the water level and set in hydraulic cement for a depth of a foot or so, to prevent rats from boring holes into the embankment. The depth of the pond would depend to some extent upon the conditions of working and upon the amount of make-up supply likely to be available during a drought, but in any case it is hardly desirable to have the pond deeper than the lowest adjacent drain, so that it may be completely emptied for cleaning out of the accumulations of mud and dirt when required. Speaking generally, if the engine runs only during the daytime a deep pond of relatively small cooling surface would suffice, whereas a night and day load requires a pond of larger cooling surface, but it may be comparatively shallow.

The pond should be clear from buildings and trees, so that the wind may have free access over the surface, as this increases the cooling action considerably, and any fencing should be as open as possible and placed several feet from the edges for the same reason. The hot water is usually carried to the farthest end of the pond in a shallow trough and taken to the condenser from near the bottom at the other end through a perforated pipe, commonly called a " snore " pipe, thus preventing leaves, weeds, &c., from being carried into the condenser and air-pumps.

When the engine works only on a day load, the area of the pond may be made about 33 sq. ft., and the capacity about 200 c. ft. per indicated horse-power. Details of construction may be seen in a paper on cooling ponds by Mr. H. W. Barker *

Spray Cooling.—The main object in spraying the hot water into the atmosphere is to expose a large surface to the cooling action of the air. The

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